Revised 4/24/15

CITY OF ANDOVER
ENGINEERING DESIGN STANDARDS
2015 CONSTRUCTION SEASON

The table is a brief summary of the design standards required by the City of Andover Engineering Department for all new development, both residential and commercial. Refer to the attached City of Andover Standard Details and the City of Andover Standard Specification for more specific information.

SANITARY SEWER

- Trunk Line Pipe
  - Material ..... PVC
  - Class ..... SDR 35 (0-16')
  - Class ..... SDR 26 (16'-25')
  - Class ..... C900 / DIP CL 50 (25' +)
- Manholes
  - Type ..... Pre-cast (see details)
  - Maximum inlet / outlet elevation difference ..... 1'
  - Minimum manhole depth ..... 8'
  - Type of Castings R-1642-B
  - Outside Drop ..... 2' minimum (DIP)
- Services
  - Material ..... PVC
  - Class ..... Schedule 40 (C900 – 25'+)
  - Wyes ..... PVC Schedule 40 (C900 – 25'+)
  - Cleanout ..... PVC Schedule 40

WATER MAIN

- Trunk Line Pipe
  - Material ..... DIP
  - Class 52
  - Fittings ..... Mech. Joint Ductile Iron - Megalugs
  - Minimum Diameter ..... 8" (6" on hydrant leads and dead end cul-de-sacs)
  - Minimum Cover ..... 8'
  - Side of street for water main ..... varies
  - Insulation (2-2" thick layers) ..... <8' cover or 3' on crossings
- Hydrant
  - Type ..... Waterous Pacer
  - Depth ..... 9' bury
  - Spacing ..... 250' radius
- Valves
  - Type ..... Resilient Seated Waterous 2500 Series (<12")
  - Type ..... Butterfly Dresser 450-01 (12" +)
  - Valve Boxes ..... Tyler 6860, 3-piece cast iron with gate valve adaptor
  - Gate Valve Extension Rod ..... Required

- Maximum spacing ..... At all intersections and max. spacing of 500’ commercial, 800’ all other

- Services
  - Material ..... 1” Type K Copper
  - Corp Stop ..... FB600 Ballcorp
  - Curb Stop ..... Ford Ball Valve B22-444M
  - Curb Box ..... Ford EM2-80-56

STORM SEWER

- Pipe
  - Material ..... RCP or HDPE
  - Class ..... Manufacturers Recommendation
  - Minimum Diameter on CB Leads ..... 12”
  - Minimum Diameter on Laterals and Trunk ..... 15”
  - Minimum Culvert Size ..... 15”
  - Culvert Material ..... RCP or CMP
  - Aprons ..... Required on all with Grates
- Catch Basins and Manholes
  - Material ..... Precast Concrete or HDPE
  - Minimum Depth ..... 4’
  - Casting (Storm Manhole) ..... R-1642 B
  - Casting (Catch Basin – with curb offset on radii) ... R-3250 A (not used much anymore)
  - Casting (Catch Basin – Surmountable Curb) ..... R-3501 TB (low point) or TR / TL
  - Casting (Catch Basin – Yard Inlet) ..... R-2535 A
  - Casting (Catch Basin – in driveway) R-3508C
  - Casting (Catch Basin – Barrier Curb) ..... R-3067V, R-3067VB (low points)
- Design
  - Frequency ..... 10-Year Design for Storm Sewer
  - Minimum Storm Sewer Design Velocity ..... 3.0 fps
  - Design Frequency for Detention Basins ..... 100-Year Event - Atlas 14 (2-100 Year or 10- Day Snowmelt for Landlocked Basins)
  - HWL below adjacent structure low opening ..... 2’
  - Emergency Overflow swale below low opening ..... 2’
  - Minimum swale grade (vegetated) 2.0%
  - Pond Outlets ..... Skimmer manhole structures

STREETS

- Pavement
  - Width (Urban) ..... 33’ back to back
  - Width (Rural) ..... 31’ back to back
  - Cul-de-sacs ..... 93’ diameter back to back
  - Temporary cul-de-sacs ..... 80’ diameter back to back
  - Maximum cul-de-sac length ..... 500’
  - Bituminous Wear Course (SP 9.5 (2,C)) ..... 1.5”
  - Bituminous Base Course (SP 12.5 (2,C)) ..... 1.5”
  - Class V Aggregate Base ..... 5”

- Subgrade ..... Must be approved granular

- Boulevard
  - Width (Urban) ..... 13.5’
  - Width (Rural) ..... 14.5’
  - Grade ..... + 2% from back of curb to right of way
  - Restoration ..... 4” Topsoil and Seed/Sod
- Concrete Curb and Gutter
  - Type ..... Surmountable
  - Type ..... B618 around radii and offset catch basins
- Bituminous Trails
  - Width ..... 8’ (10’ Regional)
  - Section ..... 2.5” Bit Wear Course, 4” Class V
  - Longitudinal Grades ..... See MnDOT Bicycle Design Manual
  - Pedestrian Curb Ramps ..... Truncated Domes at all intersections
- Concrete Sidewalks
  - Width ..... 5’
  - Section ..... 6” concrete on approved subgrade
  - Longitudinal Grades ..... See MnDOT Bicycle Manual
  - Pedestrian Curb Ramps ..... Truncated Domes at all intersections
- Miscellaneous
  - Roadway Crown 3.0%
  - Longitudinal Grades ..... 0.5% minimum, 7.0% maximum
  - Driveway Grades ..... 8% maximum
  - Maximum intersection approach grade ..... 2.0% within 30’ of an intersection
  - Horizontal Curves ..... Minimum 50’ radius (minimum of 50’ tangent between reverse curves)
  - Vertical Curves ..... MnDOT charts, 30 mph (55 mph rural)
  - Sight Triangle at intersections ..... Based upon MnDOT Design Charts, Case IIIB and IIIC.
  - Maximum Cul-de-sac length ..... 500’
  - Minimum Cul-de-sac radius ..... 20’
  - Minimum Intersection Radius ..... 20’ (30’ minimum at County Roads)
  - Right-of-way ..... 60’ (120’ for cul-de-sacs)
  - Right-of-way Corners ..... 20’ radius City Street, 30’ abutting County Roads
  - Temporary Cul-de-sacs at plat lines ..... 80’ back to back (required if stub 210’ or longer).
  - Seed Type ..... MnDOT 260 CT (lawn areas) or 240 SR (roadside, non-lawn)
  - Fertilizer ..... MnDOT 3881, Analysis 20-10-10

DRIVEWAYS

- Areas with City Sewer and/or Water
  - Surface Material ..... Concrete, Bituminous, Brick Pavers
  - Subsurface ..... Class 5
  - Width ..... 30’ maximum at ROW

- Section ..... 24' maximum in a cul-de-sac
2.5" Bit Wear Course (Min),
4" Class V (Min.)
or Geotechnical Eng Requirement

- Areas without City Sewer and/or Water
  - Surface Material (Street to ROW or Prop. Line)..... Concrete, Bituminous, Brick Pavers
  - Surface Material (ROW or Prop. Line to Garage)… Class 5 minimum
  - Subsurface ..... Class 5
  - Width ..... 30' maximum at ROW
    24' maximum in a cul-de-sac
  - Section ..... 2.5" Bit Wear Course (Min),
    4" Class V (Min.)
    or Geotechnical Eng Requirement

PARKING LOTS (City Code 12-13-8)

- Required Parking Stalls ..... contact Planning Dept and refer to City Code
- Stall Dimensions ..... 10' wide x 18' long minimum
- Drive Aisle Width ..... 24' for 60-90 degree stalls. 20' for stalls less than 60 degree angle.
- Drive Aisle Radii ..... Minimum of 16' for passenger vehicles and/or 25' for truck access. Provide turning movement templates.
- Required Grades ..... between 1% and 5%
- Surface Material ..... Same as Driveway surfacing requirements
- Striping ..... white for stalls
- Curbing ..... concrete curb and gutter required, except in areas where future parking expansion is planned.
- Parking Lot Setbacks ..... 20' (front), 10' (side and rear)